



Late Quaternary Palaeoceanographic Changes in Sea Surface Conditions in the Tropical Atlantic

Andrea Fischel (1), Marit-Solveig Seidenkrantz (1), Antoon Kuijpers (2), and Dirk Nürnberg (3)

(1) Centre for Past Climate Studies, Department of Geoscience, Aarhus University, Hoegh-Guldbergs Gade 2, Aarhus, Denmark, (2) Geological Survey of Denmark and Greenland (GEUS), Øster Voldgade 10, Copenhagen K, Denmark, (3) GEOMAR, Helmholtz Centre for Ocean Research Kiel, Wischhofstr. 1-3, Kiel, Germany

Palaeoceanographic changes and the variability in surface water mass hydrography are reconstructed in order to track tropical ocean and climate variability and inter-hemispheric heat exchange through the last 42,000 year BP. Our studies are based on the relative abundance of planktonic foraminifera combined with sea surface temperature approximation based Mg/Ca measurements, XRF scanning and stable oxygen isotope analyses in a 5 m long gravity core Ga307-Win-12GC (17°50.80N, 64°48.7290W), retrieved in the Virgin Island Basin in approx. 3,960 m water depth.

The Virgin Island Basin is the deepest part of the Anegada-Jungfern Passage in the northeast Caribbean, one of the most important pathways for water mass exchange between the Central Atlantic and the Caribbean Sea. Due to its bathymetry surface waters as well as deep water mass strata from the northern and southern hemisphere enter the basin, comprising Caribbean Surface Water (CSW), Antarctic Intermediate Water (AAIW), Atlantic Intermediate Water (AIW) and North Atlantic Deep Water (NADW).

The planktonic foraminiferal assemblage suggests rather stable sea-surface conditions during the Holocene in the NE Caribbean. However, major changes in the hydrographic setting could be identified within the glacial period. During the glacial period, clear millennial-scale variability in sea-surface temperature and productivity are present. Fluctuations in the relative abundance of *Globigerinoides ruber* in the sediment core may be correlated to Dansgaard-Oeschger events in the northern North Atlantic. Furthermore an increase in relative abundance of *Globorotalia rubescens* occurs synchronous with ice rafted debris layers described from the North Atlantic.

The faunal changes in the tropical Atlantic may thus be correlated to major climate changes in the North Atlantic, mainly D-O cyclicity as well as Heinrich events. Thus, the synchronous change in water mass distribution and hydrographic cyclicity suggests a possible linkage between tropical and North Atlantic Ocean variability during the Late Quaternary.